

WHAT IS CLAIMED IS:

1. A diagnostic X-ray system, comprising:

an X-ray generating unit that radiates an X-ray to  
a subject at a predetermined X-ray loading factor;

5 a beam limiting unit that limits a radiation  
region of the X-ray through beam limiting;

an image generating unit that generates an image  
of a predetermined size based on the X-ray passing  
through an interior of a body of the subject;

10 a brightness computing unit that computes  
brightness related to a predetermined region within  
the image;

a controller that determines an X-ray loading  
factor based on the brightness computed in said  
15 brightness computing unit and performs feedback control  
of the X-ray loading factor with respect to said X-ray  
generating unit; and

a judging unit that judges whether a region  
corresponding to the beam limiting superposes the  
20 predetermined region within the image,

wherein when said judging unit judges superposi-  
tion, said brightness computing unit transforms the  
predetermined region to a given region that does not  
superpose the region corresponding to the beam  
25 limiting, and computes brightness based on the given  
region.

2. The diagnostic X-ray system according to

claim 1, wherein:

the predetermined region is of a shape and a size corresponding to a region to be diagnosed.

3. The diagnostic X-ray system according to  
5 claim 1, wherein:

brightness computation related to the given region performed by said brightness computing unit and the feedback control of an X-ray loading factor performed by said controller based on the given region are  
10 performed in real time in association with a beam limiting manipulation by said beam limiting unit.

4. The diagnostic X-ray system according to claim 2, wherein:

brightness computation related to the given region  
15 performed by said brightness computing unit and the feedback control of an X-ray loading factor performed by said controller based on the given region are performed in real time in association with a beam limiting manipulation by said beam limiting unit.

20 5. A diagnostic X-ray system, comprising:  
an X-ray generating unit that radiates an X-ray to a subject at a predetermined X-ray loading factor;  
a beam limiting unit that limits a radiation region of the X-ray through beam limiting;  
25 an image generating unit that generates an image of a predetermined size based on the X-ray passing through an interior of a body of the subject;

a brightness computing unit that computes  
brightness related to a first region within the image  
when X-ray fluoroscopy is performed, and computes  
brightness related to a second region within the image  
5 when X-ray imaging is performed;

a controller that determines an X-ray loading  
factor based on the brightness computed in said  
brightness computing unit and performs feedback control  
of the X-ray loading factor with respect to said X-ray  
10 generating unit; and

a judging unit that judges whether a region  
corresponding to the beam limiting superposes the first  
region or the second region within the image, wherein:

when said judging unit judges that the region  
15 corresponding to the beam limiting superposes the first  
region in the X-ray fluoroscopy, said brightness  
computing unit transforms the first region to a third  
region that does not superpose the region corresponding  
to the beam limiting, and computes brightness based on  
20 the third region;

when said judging unit judges that the region  
corresponding to the beam limiting does not superpose  
the second region in the X-ray imaging, said brightness  
computing unit computes brightness based on the second  
25 region; and

when said judging unit judges that the region  
corresponding to the beam limiting superposes the

second region in the X-ray imaging, said brightness computing unit transforms the second region to the third region and computes brightness based on the third region.

5           6. The diagnostic X-ray system according to claim 5, wherein:  
the first or second region is of a shape and a size corresponding to a region to be diagnosed.

10           7. The diagnostic X-ray system according to claim 5, wherein:  
brightness computation related to at least one of the first, second, and third regions performed by said brightness computing unit, and the feedback control performed by said controller are performed in real time  
15 in association with a beam limiting manipulation by said beam limiting unit.

          8. The diagnostic X-ray system according to claim 6, wherein:  
brightness computation related to at least one of  
20 the first, second, and third regions performed by said brightness computing unit, and the feedback control performed by said controller are performed in real time in association with a beam limiting manipulation by said beam limiting unit.

25           9. A diagnostic X-ray system, comprising:  
X-ray generating means for radiating an X-ray to a subject at a predetermined X-ray loading factor;

beam limiting means for limiting a radiation region of the X-ray;

image generating means for generating an image of a predetermined size based on the X-ray passing through  
5 an interior of a body of the subject;

brightness computing means for computing brightness related to a predetermined region within the image;

control means for determining an X-ray loading  
10 factor based on the brightness computed in said brightness computing means and executing feedback control of the X-ray loading factor with respect to said X-ray generating means; and

judging means for judging whether a region  
15 affected by said beam limiting means superposes the predetermined region within the image,

wherein when said judging means judges superposition, said brightness computing means transforms the predetermined region to a given region that does not  
20 superpose the region affected by said beam limiting means, and computes brightness based on the given region.

10. The diagnostic X-ray system according to claim 9, wherein:  
25 the predetermined region is of a shape and a size corresponding to a region to be diagnosed.

11. The diagnostic X-ray system according to

claim 9, wherein:

brightness computation related to the given region  
performed by said brightness computing means and the  
feedback control performed by said control means are  
5 performed in real time in association with a beam  
limiting manipulation by said beam limiting means.

12. The diagnostic X-ray system according to  
claim 10, wherein:

brightness computation related to the given region  
10 performed by said brightness computing means and the  
feedback control performed by said control means are  
performed in real time in association with a beam  
limiting manipulation by said beam limiting means.

13. A diagnostic X-ray system, comprising:

15 X-ray generating means for radiating an X-ray to  
a subject at a predetermined X-ray loading factor;

beam limiting means for limiting a radiation  
region of the X-ray through beam limiting;

20 image generating means for generating an image of  
a predetermined size based on the X-ray passing through  
an interior of a body of the subject;

brightness computing means for computing  
brightness related to a first region within the image  
when X-ray fluoroscopy is performed, and computing  
25 brightness related to a second region within the image  
when X-ray imaging is performed;

control means for determining an X-ray loading

factor based on the brightness computed in said  
brightness computing means and executing feedback  
control of the X-ray loading factor with respect to  
said X-ray generating means; and

5           judging means for judging whether a region  
corresponding to the beam limiting superposes the first  
region or the second region within the image, wherein:

          when said judging means judges that the region  
corresponding to the beam limiting superposes the first  
10       region in the X-ray fluoroscopy, said brightness  
computing means transforms the first region to a third  
region that does not superpose the region corresponding  
to the beam limiting, and computes brightness based on  
the third region;

15           when said judging means judges that the region  
corresponding to the beam limiting does not superpose  
the second region in the X-ray imaging, said brightness  
computing means computes brightness based on the second  
region; and

20           when said judging means judges that the region  
corresponding to the beam limiting superposes the  
second region in the X-ray imaging, said brightness  
computing means transforms the second region to the  
third region and computes brightness based on the third  
25       region.

14. The diagnostic X-ray system according to  
claim 13, wherein:

the first or second region is of a shape and a size corresponding to a region to be diagnosed.

15. The diagnostic X-ray system according to claim 13, wherein:

5           brightness computation related to at least one of  
the first, second, and third regions performed by said  
brightness computing means, and the feedback control  
performed by said control means are performed in real  
time in association with a beam limiting manipulation  
10       by said beam limiting means.

16. The diagnostic X-ray system according to claim 14, wherein:

          brightness computation related to at least one of  
the first, second, and third regions performed by said  
15       brightness computing means, and the feedback control  
performed by said control means are performed in real  
time in association with a beam limiting manipulation  
by said beam limiting means.